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PATENT

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11 UNITED STATES PATENT APPLICATION

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24 PROCESS FOR MANUFACTURING A CAPITAL FOR AN ARCHITECTURAL COLUMN

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1 **CROSS-REFERENCE TO RELATED APPLICATION**

2 This is a continuation of copending U. S. application Serial No. 09/862,893, filed on
3 05/22/2001.

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09862893-052201

1 **BACKGROUND OF THE INVENTION**

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3 **FIELD OF THE INVENTION**

4 This invention relates to a process for manufacturing a capital for an architectural column
5 using rotation of a mold into which a foam and an elastomer have been placed. As used
6 throughout this document, the term "elastomer" is meant also to include a "resin"; and the term
7 "foam" includes any liquid that will expand and create a lightweight filler.

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9 **DESCRIPTION OF THE RELATED ART**

10 The inventor is unaware of any patents concerning the making of an architectural
11 structure through the rotation of a mold into which a foam-elastomer has been placed.

12 Capitals for architectural columns are traditionally made from a variety of materials,
13 ranging from cement and plaster to fiberglass and resins. The processes by which capitals are
14 manufactured utilizing such materials, however, often consume considerable time and are
15 otherwise inefficient. Moreover, capitals made from traditional materials tend to be heavy,
16 brittle, and prone to warping.

17 It is assumed by the inventor that capitals have not been made from elastomers or both
18 foam and elastomers because of the difficulty that has been experienced in working with
19 elastomers and foam.
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SUMMARY OF THE INVENTION

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Sub A Elastomers are placed inside a mold that is rotated about three axes to assure that the elastomers cover the entire inside surface of the mold. Several different coatings of elastomers are utilized.

Elastomers are utilized to give strength to the capital. However, to minimize weight while reducing the tendency of a hollow capital to warp, the space inside the elastomers is filled with foam.

Rotation of the mold can be accomplished in any manner but is preferably done with a machine.

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BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 depicts a cutaway view of a mold that is used to create the capital with the process of the present invention.

Figure 2 illustrates a machine that is used as one way of rotating the mold during the process of creating the capital.

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DESCRIPTION OF THE PREFERRED EMBODIMENT

A capital mold 1 is first coated with a mold release. The inside 2 of the mold 1, *i.e.*, everywhere the elastomer will eventually touch is lightly coated with a mold release. Any mold release that is traditionally used may be utilized. Aerosol mold release is preferred. One aerosol mold release is manufactured by Sherwin-Williams Diversified Brands, Inc. of Bedford Heights, Ohio.

Optionally and preferably, either before or after—but preferably after—the mold release has dried, the mold release is coated with a clear aerosol spray enamel to give the resultant capital a glossy shine.

A first opening 3 of the mold 1 is placed upon a surface 4, preferably but not necessarily, a flat surface 4 that has been coated with mold release.

Either before or after placing the mold 1 upon the surface 4, a plug 5 is positioned on the surface 4 where the first opening 3 is or will be located. The plug 5 is preferably silicon rubber because such a substance does not have to be coated with mold release in order for the plug 5 to be removed. Any other material can, however, be used for the plug as long as such material is coated with mold release. If positioning of the plug 5 occurs after the mold 1 has been placed upon the surface 4, positioning must be done through another opening 6.

Through another opening 6 in the mold 1 foam 7 is poured around the plug 5 to a level that is less than the thickness of the mold 1 and preferably, but not necessarily, less than the height of the plug 5. The foam 7 must completely seal the first opening 3 except where the plug 5 is located. If the foam 7 covers the plug 5, the subsequently hardened foam 7 must be removed above the plug 5 in order to assure that the first opening 3 is not blocked. Such removal can be by cutting, drilling, or any other technique that will create a hole 8 through the hardened foam 7.

After the foam 7 has hardened, the mold 1 is removed from the surface 4.

All other openings 5 (one or more) in the mold 1 must be securely covered. The plug 5 is removed from the first opening 3.

Then an elastomer is introduced into the mold 1 and the mold 1 is rotated about multiple different axes, preferably but not necessarily, two orthogonal axes. Introduction of the elastomer may occur either before or after rotation of the mold 1 commences.

The plug 5 is then replaced in the first opening 3.

1 The introduction of the elastomer is repeated after the prior coating created by the
2 elastomer has become tacky, *i.e.*, viscous, but before the prior coating has become firm. This
3 enables both coatings to produce a single generally uniform layer. Four introductions of
4 elastomer and four resultant coatings is preferred but not essential.

5 After the final coating of elastomer has become tacky but not firm, foam 7 is introduced
6 into the mold 1. It is preferable, but not essential, that the foam 7 be a member of the
7 polyurethane family. This would include, but not be limited to, a blend of polyester and
8 polyether.

9 Periodically the plug 5 is removed to reduce pressure as the foam solidifies. A preferred,
10 but not essential, period is thirty seconds.

11 The quantity of foam 7 selected is such that it will not leak from the mold 1 when the
12 plug 5 is removed if the plug 5 is near a vertical position.

13 Once the foam 7 has ceased to expand, rotation is stopped, the plug 5 is removed, the
14 mold 1 is oriented to place the first opening 3 is placed near the top of the mold 1 (to such an
15 extent that subsequently introduced foam 7 will not spill in the liquid state from the first opening
16 3), and the requisite amount of foam 7 necessary to fill any remaining void within the mold 1 is
17 introduced.

18 Multiple introductions of elastomer are necessary to prevent the elastomer from simply
19 coalescing near the center of the mold. This phenomenon does not occur with the foam 7; so,
20 there can be either single or multiple introductions of the foam 7.

21 Rotation is preferably accomplished with the machine 8 shown in Figure 2. A first end 9
22 of shaft 10 is releasably attached to the mold 1. The shaft 9 is preferably, but not necessarily
23 made of stainless steel. A second end 11 of the shaft 10 is releasably attached to the machine 8.
24 If any portion of the shaft 9 or the mechanism for attaching the shaft 10 (preferably, but not
25 necessarily a plate 12 and bolts 13) will cover another opening 6, such portion must be coated
26 with mold release.

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